

COMET 1902 b.—Circular No. 51 from Kiel gives the subjoined elements and ephemeris, as calculated by Herr Elis Strömgren from the observations made at Lick on September 1, at Urania on September 2, and at Copenhagen on September 4, for the comet discovered by Perrine at Lick on September 1.

Elements.

$T = 1902$ Nov. 23 $^{\text{h}}$ 31 $^{\text{m}}$ 15 Berlin.

$$\begin{aligned} \omega &= 153^{\circ} 53' 2'' \\ \Omega &= 50^{\circ} 10' 6'' \\ i &= 157^{\circ} 8' 2'' \\ \log q &= 9.60094. \end{aligned}$$

Ephemeris.

| 1902. | α app. | δ app. |
|---------|---------------|-----------------|
| Sept. 6 | 3 11 48 | ... +37° 0' 3" |
| 10 | 3 4 26 | ... +39° 10' 4" |
| 14 | 2 52 59 | ... +41° 51' 4" |
| 18 | 2 34 47 | ... +45° 13' 2" |
| 22 | 2 4 19 | ... +49° 23' 3" |
| 26 | 1 10 1 | ... +54° 3' 8" |

Perrine describes the comet as "slightly elongated, mean diameter 4', magnitude =9, tolerably well-defined nucleus, possesses a tail." Struve, observing at Königsberg on September 2, 10h. 41m. 2s (Königsberg), saw a sharply defined nucleus of the 11th magnitude.

NEW ALGOL VARIABLE.—Mr. A. Stanley Williams announces in the *Astronomische Nachrichten*, No. 3811, the discovery of a new Algol variable (13, 1902 Lyrae), the position of which he gives as

$$\alpha = 19^{\text{h}}. 10^{\text{m}}. 48^{\text{s}}. 7. \quad \delta = +32^{\circ} 10' 1'' (1855).$$

This object is the most following, and normally the brightest, of the three stars forming a small triangle south of the 9¹ mag. star B.D. +32° 3377. On the scale used, its normal magnitude is 10.98, whilst at minimum it is only just visible with the 6.5-inch reflector, i.e. its magnitude is about 12.8.

The star remains at its normal brightness for about 3d. 6h. 22m., and the increase and decrease each occupy about 4 hours; there is no apparent interval at minimum, and the observations, so far, have not indicated the presence of any secondary minimum.

Subjoined is an extract from an ephemeris, calculated for every fifth minimum by Mr. Williams.

| 1902. | G.M.T. | | | |
|----------|--------|-----|-----|-------|
| | | h. | m. | s. |
| Sept. 21 | ... | ... | ... | II 28 |
| Oct. 9 | ... | ... | ... | II 20 |
| Oct. 27 | ... | ... | ... | II 12 |
| Nov. 14 | ... | ... | ... | II 4 |
| Dec. 2 | ... | ... | ... | 10 56 |
| Dec. 20 | ... | ... | ... | 10 48 |

Prof. E. Hartwig observed this variable from 9h. 22m. to 11h. 19m. (Bamberg M.T.) on August 16, and found that, during that period, its light decreased by 1.3 magnitudes; cloud and strong moonshine prevented the observations from being carried on throughout the minimum.

SIR DAVID GILL'S NEW THEORY OF STELLAR MOVEMENT.—Mr. Carpenter has recently been examining the measures of the stellar photographs obtained at Oxford during the last seven or eight years, in order to see if they indicate any such movement of the brighter stars as a whole, with respect to the fainter stars as a whole, as was recently suggested by Sir David Gill. Although this was too great a task for Mr. Carpenter to finish during his holiday, he got far enough to find indications which supported Gill's hypothesis.

This result was considered so important that the whole of the Oxford staff was deputed to examine the photographic measures for a belt of stars about Dec. +26°, and the result indicates that there is an apparent movement as suggested amounting to about 0.002 per magnitude per year. This corresponds in magnitude to the quantity found by Gill, "but its sign is opposite to that found by him." If this sign is found on further revision to be correct, then it is difficult to imagine that the movement is simply one of rotation, and further investigation must be made before any definite theory may be accepted (The Observatory, September, 1902).

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

DR. W. H. MILLS, Fellow of Jesus College, Cambridge, has been appointed head of the chemical department of the Northern Polytechnic Institute in succession to Mr. H. C. L. Bloxam.

MR. H. W. MALCOLM, B.Sc., has been appointed lecturer and demonstrator in physics at University College, Bristol, in the place of Mr. L. N. Tyack.

MR. W. R. KELSEY, late of the Bradford Technical College and of the South-West London Polytechnic, has been appointed principal of the Taunton Municipal Technical Institute.

THE University of Nebraska has this year added a course of study in forestry to its curriculum. The course will extend over a period of four years.

THE sum of 1000/- has been placed by Sir Conan Doyle at the disposal of the senatus of Edinburgh University for the purpose of instituting a bursary in the faculty of medicine, available only for students from South Africa. The bursary is to be administered in detail as the University may direct.

Science for September 5 publishes for the fifth year in succession statistics of the conferment of the degree of Doctor of Philosophy by American universities. In the present year, some 214 doctorates have been conferred by twenty-seven institutions, as against 253 in 1901, 233 in 1900, 224 in 1899 and 234 in 1898. The largest numbers of degrees conferred were in the subjects of chemistry, zoology, physics and botany, the numbers being respectively 24, 16, 12 and 11.

SIR HENRY CRAIK's report for the year 1902 on secondary education in Scotland shows that there has been a large increase in the number of schools presenting candidates in science subjects at the leaving certificate examination, and also in the total number of candidates presented. In many cases there has been a distinct advance in the quality of the work done as compared with former years. It is satisfactory to know that in the examinations of Scottish secondary schools great prominence is given to oral and practical methods of testing the work, and the examinations in the case of each school are shaped by the curriculum of that school.

THE educational announcements for the session 1902-3 of the Northampton Institute, Clerkenwell, make an imposing volume of some 200 pages. Classes will be provided in a large number of technological and trade subjects, but students who require instruction in literary or commercial subjects must go to one of the other City polytechnics, for the Northampton Institute is primarily intended to teach technology. Very properly, great attention is given to subjects which directly assist the industries of the immediate neighbourhood. The courses of instruction fall into two distinct sections, the engineering day classes for students willing to give the whole of their time for one or more years to a systematic training in some branch of engineering, and the evening classes in a variety of subjects for working men engaged during the day.

THE new regulations of the University of Oxford School of Geography show that admission is not confined to members of the University, but all applicants must give satisfactory evidence of sufficient general education to profit by the teaching. A course of instruction in the subjects required for the University diploma in geography begins in October and extends over one academic year. Weekly lectures are delivered by all the members of the staff, six in number, and practical instruction is given on at least four days in each week, and includes position-finding, topographical surveying and map-projection. A scholarship of the value of 60/- is offered annually for competition among members of the University who have taken honours in one of the final schools of the University. During 1901-2 the lectures were attended by 208 students, of whom 163 were men from twenty-one colleges, and forty-five women from five colleges or halls.

IN urging the necessity for a more extensive and highly developed system of technical education in this country, English men of science often refer to the provisions made in the United States of America to equip American workers with a practical education of a technical kind so as to fit them to take a useful place in the industries of their country. A recent address, by Prof. V. C. Alderson, Dean of the Armour Institute of Technology at Chicago, on "Technical Education an Economic Necessity," shows some imperfections in the American system. Prof. Alderson is of opinion that up to the present the existing admirable technical institutions in the United States have concerned

themselves only with the needs of the highest grades of workers, "the commissioned officers of our industrial army," as he calls them. "The great mass of non-commissioned officers and privates are left uncared for." The region of what may with approximate correctness be called "secondary technical education" is represented in the United States, Prof. Alderson says, "by more or less feeble efforts in a few trade schools, in a limited number of private institutions aimed to help the working men and in night schools." American educational authorities are urged, later in the address, to follow the example of Switzerland, and, "recognising the dependence of national prosperity upon technical education, to set about the task of providing an education for all classes of workers suited to their callings. The technical high school, if properly equipped and put in close relationship with the trades and industries, will satisfy this national need; it will not be a copy of the European trade school, but rather an adaptation of the trade school which will be in harmony with American thought and American educational ideals."

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 8.—M. Bouquet de la Grie in the chair.—The president announced to the Academy the death of M. R. Virchow, Foreign Associate of the Academy.—Address by M. Bouchard on the occasion of the death of R. Virchow.—On the irreducibility of uniform transcedentals defined by differential equations of the second order, by M. Paul Painlevé.—The experimental study of the resistance to compression of armed mortar, by M. Considère. A study of the mechanical properties of prisms of cement having embedded in its mass metallic wires of various shapes. The results are summarised in graphical form.—On the eruption of Martinique, by MM. A. Lacroix, Rollet de l'Isle and Giraud. In discussing the calorific and physiological effects of the eruption in the town of St. Pierre, all the observations indicate the rapid and persistent action of a source of heat at a high temperature, producing asphyxia. In a central zone the temperature was sufficiently high to determine combustion, to superficially carbonise the bodies after burning their clothes, but it was insufficient to melt thin copper wires, or below 1054°C . On the edges of this zone the phenomena of asphyxia continue, but the temperature was hardly high enough even to char the clothes. The presence of steam and ashes in the destructive cloud which overwhelmed the city is certain; the presence of combustible gases such as hydrogen sulphide, hydrocarbons or hydrogen cannot be proved with certainty, but such a supposition would explain many of the effects produced. The commission consider the complete evacuation of the entire neighbourhood of Mont Pelée is imperative, and must be maintained until the complete cessation of the volcanic disturbances.—On the secular acceleration of the mean longitude of the moon, by M. H. Andoyer.—The comet 1902 b, discovered on September 1 by M. Perrine and independently by M. Borrelly, September 2, at the Observatory of Marseilles. Observations made by MM. Borrelly and L. Fabry.—Observations of the comet 1902 b, made at the Observatory of Besançon, by M. P. Chofardet.—On certain differential equations, by M. Edmond Maillet.—On the properties of closed chambers relating to electric waves, by M. A. Turpaine.—On a new acidimetric indicator, by M. L. J. Simon. By the dry distillation of tartaric acid with potassium bisulphate, a new acid isomeric with pyrotartaric acid has been obtained the ferric salt of which may be used as an indicator. It possesses the curious property of giving similar indications to a mixture of methyl-orange and phenolphthalein, and in some cases conveniently replaces such a mixture.—On the interrenal bodies of Plagiostomes, by M. Ed. Grynfelt.—On some india-rubber plants on the west coast of Africa, by M. Aug. Chevalier.—On the duration of the germinating period in seeds exposed to sunlight, by M. Victor Jodin.

NEW SOUTH WALES.

Linnean Society, July 30.—Mr. J. H. Maiden, president, in the chair.—Descriptions of some new species of plants from Western Australia, by Mr. W. V. Fitzgerald. Five additions to the flora of Western Australia referable to the genera *Mitrasacme*, *Cremnophila*, *Grevillea* and *Schoenus* (two species) are described.—Descriptions of new species of Queensland Lepidoptera, by

Dr. Thomas P. Lucas. Two genera and five species, distributed among three families (Cossidae, Pyralidae and Xyloriidae), are described as new.—A revision of the genus *Notonomus* (fam. Carabidae; subfam. Feronini), by Mr. Thomas G. Sloane. Seventy-two species are attributed to the genus, twenty-seven being described as new.—Contributions to a knowledge of Australian Entozoa. No. ii. On a new species of *Distomum* from the sawfish-shark (*Pristiophorus cirratus*, Lath.), by Mr. S. J. Johnston. The worm has an extremely mobile neck in the living state. Its most characteristic features are its size, the character and position of the suckers, the folded but unbranched limbs of the intestine, the grape-like vitelline glands and the very marked development of the excretory system. It falls into Dujardin's subgenus *Brachylaimus*.—Notes on Australian Lycenidae, by Mr. G. A. Waterhouse. *Lycaena nigra*, Misk., is referred to the genus *Megisba*, Moore. *Holochila purpurea*, Grose-Smith and Kirby, is given as a synonym of *H. cyprotus*, Olliff. *Holochila androdes*, Miskin, and *H. subargentea*, Grose-Smith and Kirby, are given as synonyms of *H. helenita*, Semper. The sexes of *Ogyris oroetes*, Hew., and *O. amaryllis*, Hew., are described; likewise two new species. The paper concludes with a note on *O. ianthis*, Waterh.

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical section), part 4 for 1902, contains the following memoirs communicated to the Society:—

November 8, 1901.—David Hilbert: On the bases of geometry.

May 3, 1902.—Ernst Richard Neumann: New integral properties of successive potentials. W. Voigt: On the absolute retardation of light-waves on reflection.

The accompanying *Proceedings* include reports on the progress of the "Mathematical Encyclopædia" and the publication of Gauss's works; obituary notices of Friedrich Leo, Adolf Erik von Nordenskiöld, Karl Hegel; and congratulatory addresses to Eduard Süss, of Vienna, and Dedekind, of Brunswick.

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